CLAIMS:

1. Loudspeaker protection system comprising filter means for defining one or more frequency bands of an audio signal, characterised in that the loudspeaker protection system further comprises controllable amplifier/attenuator means coupled to the filter means, and processing means coupled to control the amplifier/attenuator means, such as to determine audio power in at least one of said frequency bands representing relevant loudspeaker protection information used for selective audio power control in said at least one frequency band.

2. Loudspeaker protection system according to claim 1, characterised in that the processing means are equipped to determine the audio power S_j in frequency band j in proportion to:

$$v_{jtop}^2 * R\{Y_j\},$$

where v_{jtop} is the peak value of the amplitude of the frequency components in frequency band j, and $R\{Y_j\}$ is the real part of the electric admittance of the loudspeaker in frequency band j.

3. Loudspeaker protection system according to claim 2, characterised in that in the loudspeaker protection system j = 1, 2, 3 ... n, where n equals the number of frequency bands wherein the frequency spectrum of the audio signal is divided.

4. Loudspeaker protection system according to claim 2 or 3, characterised in that the processing means are capable of summing S_j over a specified subrange of possible values of j, where j is in the range from 1, 2, ... n.

5. Loudspeaker protection system according to claim 4, characterised in that if any summed value or combination of values S_j approximates some normalised value S_{norm} the amplifier/attenuator means are controlled by the processing means.

6. Loudspeaker protection system according to claim 4 or 5, characterised in that the processing means are equipped to determine S_j or any summation thereof every 0.001 - 2 sec., in particular every .1 - 1 sec.

7. Loudspeaker protection system according to any of the claims 1-6, characterised in that the amplifier/attenuator means are controlled such by the processing means that attenuation factors of the amplifier/attenuator means are proportional to:

$$1 / \sqrt{\alpha} + ß_j (1 - 1 / \sqrt{\alpha})$$

where $\alpha = S / S_{norm}$, and $ß_j$ represents a factor whose value depends empirically on the particular frequency band j.

8. Loudspeaker protection system according to any of the claims 1-7, characterised in that the loudspeaker protection system comprises a series arrangement of the loudspeaker and a measuring element such as a resistance, whose common connection point is coupled to the processing means to account for actual impedance data of the loudspeaker.

9. Loudspeaker protection system according to one of the claims 1-8, characterised in that the processing means is arranged to initiate control in a shorter amount of time than that control is withdrawn.

10. Audio set provided with a loudspeaker protection system according to one of the claims 1-9.